

Sub E' 1

1. ~~(Amended Three Times)~~ A method of operating a network, the network comprising
a plurality of nodes coupled by a plurality of optical links, comprising:
provisioning a virtual path between a first node and a second node of said plurality of nodes, wherein said provisioning comprises:
identifying said first node and said second node of said plurality of nodes,
dynamically discovering a physical path from said first node to said second node by dynamically identifying any intermediary nodes comprising said physical path, and
dynamically establishing said virtual path by dynamically configuring a set of connections between said first node, said second node, and said intermediary nodes, if any, using intermediary links of said plurality of optical links.

2. (Previously Amended) The method of claim 1, further comprising:
testing said virtual path by testing each one of said intermediary nodes and said intermediary links as a single circuit.

3. (Previously Amended) The method of claim 1, further comprising:
allocating said intermediary links between said first, said second and said intermediary nodes.

4. The method of claim 3, further comprising:
terminating said virtual path by automatically deallocating said intermediary links.

5. The method of claim 4, wherein said intermediary links are available for re-use upon deallocation.

6. The method of claim 3, further comprising:
terminating said virtual path by sending a termination message from one of said first and said second nodes to the other of said first and said second nodes, wherein said termination message is sent along said physical path and each one of said

intermediary links is deallocated by a respective one of said nodes as said termination message is sent to each of said nodes.

7. The method of claim 6, wherein said intermediary links are available for re-use upon deallocation.

8. The method of claim 6, wherein said intermediary links are deallocated substantially simultaneously upon reception of a broadcasted termination message.

9. The method of claim 1, further comprising:
restoring said virtual path in response to a failure along said physical path by:
discovering an alternate physical path from said first node to said second node
by automatically identifying intermediary nodes of said alternate
physical path, and
re-establishing said virtual path by configuring a set of connections between
said nodes of said alternate physical path.

10. The method of claim 9, wherein at least one of said intermediary nodes of said physical path is also one of said intermediary nodes forming said alternate physical path.

11. The method of claim 1, further comprising:
sending messages to maintain knowledge of a topology of the network and to
determine if neighboring nodes have failed.

12. The method of claim 11, wherein each one of said plurality of nodes obtains information on neighboring ones of said plurality of nodes such that each one of said plurality of nodes is able to maintain a database representing a topology of the network.

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13. **(Amended Once)** The method of claim 12, wherein use of said database in said dynamically discovering said physical path allows said dynamically discovering said physical path to proceed more quickly.

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D3

33. (~~Amended Two Times~~) An optical network comprising:
a plurality of optical links;
a plurality of nodes, each one of said plurality of nodes coupled to at least one other of said plurality of nodes by at least one of said plurality of optical links, wherein said nodes are configured to provision a virtual path between a first node and a second node of said plurality of nodes by virtue of being configured to:
identify said first node and said second node of said plurality of nodes,
dynamically discover a physical path from said node to said second node by virtue of being configured to dynamically identify any intermediary nodes of said physical path, and
dynamically establish said virtual path by virtue of being configured to dynamically configure a set of connections between said nodes of said physical path.

Sub E3
D4

35. (~~Amended Three Times~~) A network comprising:
a plurality of nodes coupled by a plurality of optical links, wherein said plurality of nodes are configured to provision a virtual path between a first node and a second node of said plurality of nodes, wherein each of said plurality of nodes comprises:
identifying means for identifying said first node and said second node of said plurality of nodes,
discovering means for dynamically discovering a physical path from said first node to said second node by dynamically identifying any intermediary nodes of said physical path, and
establishing means for dynamically establishing said virtual path by dynamically configuring a set of connections between said nodes of said physical path.